

Comparing employment, employment services, and employment goals in propensity-matched samples of people with intellectual and developmental disabilities with and without autism

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Abstract.

BACKGROUND: People with intellectual and developmental disabilities (IDD) tend to have poor employment outcomes relative to the general population, as do people with autism. Research is unclear, however, about how people with IDD with and without autism compare on a variety of employment-related indicators, including desire to work, having work as a goal in their service plans, and being employed.

OBJECTIVE: To understand how people with IDD with and without autism compare on important employment-related outcomes, based on a matched random sample.

METHODS: Using merged administrative datasets, we used propensity score matching to construct statistically proximate samples of Medicaid waiver users in a single state with IDD both with and without autism, and then tested differences between the two groups on important employment-related indicators.

RESULTS: People with IDD and autism were less likely than people with IDD alone to have a goal for employment in their individualized service plans and to hold employment in group community settings. There was no statistical difference between the two groups in terms of desire to have a job or employment in individual community settings.

CONCLUSION: Results reinforce the importance of planning for employment if holding employment is a person's aim, regardless of the presence of autism.

Keywords: Employment outcomes, autism, propensity score matching

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1. Introduction

For people with intellectual and developmental disabilities (IDD), there has been increasing effort in recent years to move away from segregated day activities to competitive, community-based employment. Though supported by policy commitments such as Employment First, which prioritizes competitive community employment over more segregated daytime activities (Association of People Supporting Employment First [APSE], 2020), employment remains elusive for many people with IDD, including people with autism spectrum disorder (ASD).

Despite the adoption of Employment First policy in 40 states as of January 2020 (APSE, 2020), only 19% of adults with IDD who use state-funded services reported any type of community work (including group-based work activity), based on results from the 2018–19 National Core Indicators – In Person Survey (NCI-IPS; Human Services Research Institute [HSRI] and National Association of State Directors of Developmental Disability Services [NASDDDS], 2020). Of those who were employed in the community, 35% worked in settings that were not fully integrated, such as group employment or businesses that primarily employ people with disabilities (HSRI & NASDDDS, 2020). Based on a Maryland study, about 33% of people with IDD who work in settings that are not fully integrated may receive sub-minimum wages (Simonson & Neubert, 2013). Recent research suggested that, compared to people with IDD alone, people with IDD and ASD may be even less likely to secure work in the community (Bush & Tasse, 2017).

Though recent literature has documented much about employment outcomes for people with IDD and people with ASD, few studies do so by directly comparing people with IDD with and without ASD. Further, we have relatively little comparable information about the desire for employment for people with IDD with and without ASD, or how system-level interventions, like offering employment goals for a person's individualized service plan (a plan developed collaboratively by a person with IDD, their case manager, and service providers to guide services and goals for those services for a set period of time), may compare between the two groups. The current study explored employment outcomes and desires for employment for people with IDD with and without ASD, based on a random sample of adults who used state-funded services, matched on factors that

have been found to predict employment outcomes in previous literature.

1.1. Predictors of employment outcomes for persons with IDD

A number of individual- and system-level factors have been found to predict community employment for people with IDD. At the individual level, both support needs and level of intellectual disability are associated with community employment (Bush & Tasse, 2017; Carter et al., 2012; Chan et al., 2018; Nord et al., 2018; Park & Bouck, 2018). Compared to people with severe or profound ID, people with mild or moderate intellectual disabilities are more likely to be employed in the community (Bush & Tasse, 2017; Nord et al., 2018; Park & Bouck, 2018). Similarly, people with higher independent living skills (Carter et al., 2012; Chan et al., 2018), people with opportunities to make more choices (Authors, 2021; Bush & Tasse, 2017), and people who communicate using spoken language (Carter et al., 2012) are more likely to have a job than people with lower independent living skills, fewer opportunities to make choices, and/or those who do not communicate using spoken language. Behavioral support needs are also associated with employment outcomes. However, findings differ by study, with some studies reporting that people with high behavioral support needs are less likely to find employment than people with lower behavioral support needs (Bradley et al., 2018; Shogren & Shaw, 2016; Simonsen & Neubert, 2013), while other studies found no significant difference (Nord et al., 2018).

At the system-level, people who had community employment as a goal in their individual service plan (ISP) were significantly more likely to have a job (Butterworth et al., 2015; Nord et al., 2018) than people without such a goal. For instance, Nord and colleagues (2018) found that people with IDD who had an employment goal were 11 times more likely to have an independent community job and six times more likely to have group-based community employment versus those without a goal. Similarly, Broda et al. (2021) found that having an employment goal was a strong predictor of having a job in the community.

1.2. Differences in predictors employment for people with IDD, with and without ASD

Though many similarities exist, people with ASD and IDD may be particularly challenged in finding

suitable employment. Bush & Tasse (2017) found that people with ASD and IDD were less likely to secure employment than were people with only IDD. This is likely due to an interaction of individual and systemic factors. At the individual level, similar to observations pertaining to people with IDD only, for people with IDD and ASD, higher independent living skills were associated with obtaining and sustaining community employment (Chan et al., 2018). Additionally, some authors have posited that difficulties navigating the interactional aspects of work, including the interview process, may pose particular challenges for people with ASD (Scott et al., 2015). At the systems level, higher household income, larger maternal social networks, and more inclusive school settings have all been shown to have associations with community employment for adults with IDD and ASD (Chan et al., 2018).

Notably, analyses of employment outcomes for people with IDD only and people with both IDD and ASD found that demographic characteristics also differed significantly between the two groups (Bradley et al., 2018; Bush & Tasse, 2017), leaving some questions about the comparability of samples in research comparing the two groups. Bush and Tasse (2017) reported that people with IDD and ASD had higher levels of intellectual disabilities, needed more support for challenging behaviors, and had more documented mental health conditions than people with only IDD. Similarly, Bradley and colleagues (2018) found that people with IDD who needed support for self-injurious behavior were more likely to have ASD than people without these support needs. However, while employment differed significantly, predictors of employment remained similar across groups with lower levels of ID, fewer medications for mental health conditions, fewer behavioral support needs, and higher choice predicting employment for people with and without ASD (Bush & Tasse, 2017).

1.3. Research questions

Given the limited comparative investigation of employment patterns for people with IDD with and without ASD, our study makes a significant new contribution to the literature by directly comparing key employment-related outcomes using matched samples of participants with and without ASD from a robust random sample of adults with IDD who used state funded services in a single state. Specifically, we pursued the following question in this study:

- 1) How do participants with ASD compare to a matched sample of participants without ASD in terms of employment goals, training, supports, and outcomes?

2. Method

The methods used to conduct this study were approved by the Institutional Review Board at the authors' university (approval number HM20002308).

2.1. Data sources

A hallmark of the current study was the use of three major IDD-related datasets collected within a single state, integrated at the individual level to result in a single dataset for analysis.

2.1.1. National Core Indicators – In-Person Survey (NCI-IPS)

The NCI-IPS is a project of the HSRI, NAS-DDDS, and participating states. The NCI-IPS has three parts. First, the background section, containing demographic, diagnostic, and service data, is filled out by a case manager prior to administration of the in person survey. Next, Part I of the in-person survey must be answered by the person with IDD directly, and contains a series of subjective questions about service satisfaction and quality of life. Finally, Part II of the in-person survey contains objective questions about rights, choices, community participation, etc. Part II is intended to be answered by the person with IDD directly whenever possible, but since the questions are objective, a proxy respondent may answer as needed. All NCI-IPS respondents are adults (age 18+) with IDD who used at least one state-funded Home and Community Based Services (HCBS) waiver service in addition to case management. We used data from the 2017 and 2018 cohorts of the NCI-IPS from Virginia. We merged both cohorts together to form a more robust dataset for analysis.

2.1.2. Supports Intensity Scale – Adult (SIS-A)

The SIS-A (Thompson et al., 2015) is a nationally validated tool that states often use to assess the support needs of a person with IDD for the purpose of resource allocation and/or service planning. Using the SIS-A, states may assess the support needs of a person with IDD across six domains (home living, community living, lifelong learning, employment, health and safety, and social activities) as well as

overall support needs as summarized by the Support Needs Index. Established criteria also exist for identifying people with IDD who have extraordinary behavioral and/or medical support needs. We used SIS-A assessments corresponding to the NCI cohort years 2017 and 2018 in this study, as provided to us by the state's DD agency.

2.1.3. Medicaid HCBS expenditures

Finally, the third dataset used in our analysis included claims paid for Medicaid (HCBS) waiver services. The state's Medicaid agency furnished us with Medicaid data from state fiscal years 2017 and 2018 for this study. This study used only claims paid for Medicaid HCBS services (including, for example, residential services, employment or day services, respite, etc.) and excluded acute medical claims (for example, for hospitalizations, outpatient medical or behavioral health visits, ER visits, etc.). We aggregated all Medicaid HCBS claims for a particular beneficiary with IDD into a single variable representing total HCBS spending per individual, per fiscal year.

2.2. Data merger process

The three data sources described above were merged at the individual level. A unique identifier was present on all three data sources, and that identifier was used as a key for the merger process. Once the three datasets were combined for a particular fiscal year, that identifier was removed and replaced with a study identifier that was unique to each person, but not personally identifiable. The dataset with non-identifiable data was used for analysis.

The same data merger process was used for fiscal years 2017 and 2018. Data from both years were combined into a single dataset for the analyses described in this paper. Because independent random samples are drawn for participation in the NCI-IPS each year, the chance of a particular person with IDD responding in both years is minimal.

2.3. Variables

2.3.1. Matching variables

The 29 variables we used to create matched samples of participants with and without ASD were all derived from previous literature about factors that may promote employment for people with IDD. Most of the matching variables came from the NCI-IPS and covered personal and disability-related charac-

teristics (e.g., age, race; communication; mobility; mental health conditions), types of behavioral services the person used (e.g., "Person needs support to manage self-injury behavior"), the extent to which a person exercised their rights (e.g., "Person can lock his/her bedroom"), and information about a person's perception of their opportunity to make choices about their daily life (e.g., "Person chooses what to buy with spending money"). A full accounting of all of the matching variables we used, including statistical comparisons of covariate balance before and after the matching procedure, is available on our Open Science Framework website for public viewing [blinded for peer review].

In addition to the NCI-IPS matching variables, we also matched on three variables from the SIS (Total Supports Need Index, Extraordinary Behavioral Support Needs, and Extraordinary Medical Support Needs). Finally, we match on one Medicaid-based variable, representing a person's total Medicaid HCBS expenditures in a particular year.

2.3.2. Comparison variable

This analysis is premised on the desire to understand differences in employment-related outcomes in a matched sample of people with IDD with and without a diagnosis of ASD. As such, we used one variable from the background section of the NCI-IPS as the condition variable for our study. The variable simply asked whether the person with IDD also had a diagnosis of ASD. The variable was treated as dichotomous (yes/no).

2.3.3. Outcome variables

All outcome variables came from the NCI-IPS. We looked at eight variables with binary (yes/no) response options to assess whether a person had a paid job in the community, and if not, if they wanted a job in the community (See Table 1). Jobs in the community were described to participants as supported or competitive employment in places where most people did not have disabilities. The description explicitly did not include facility-based work or volunteerism. Two of these items came from the background information section of the NCI-IPS and another came from section 1. Both items were included in analysis to include the persons' interpretations of community employment. Outcome items also inquired about whether people had community employment goals, or received employment services and employment training opportunities. Table 1 provides descriptive comparisons of the eight outcomes by group, includ-

Table 1
Descriptive comparisons of participants with and without ASD

Item	“No” ASD diagnosis (N = 1162)	“Yes” ASD diagnosis (N = 288)	Overall (N = 1450)
Community employment is a goal in person’s service plan? ^a			
No	835 (71.9%)	227 (78.8%)	1062 (73.2%)
Yes	284 (24.4%)	51 (17.7%)	335 (23.1%)
Missing	43 (3.7%)	10 (3.5%)	53 (3.7%)
Would you like a job in the community? ^b			
No	297 (25.6%)	48 (16.7%)	345 (23.8%)
Yes	327 (28.1%)	50 (17.4%)	377 (26.0%)
Missing	538 (46.3%)	190 (66.0%)	728 (50.2%)
Do you have a paid job in the community? ^b			
No	692 (59.6%)	118 (41.0%)	810 (55.9%)
Yes	116 (10.0%)	23 (8.0%)	139 (9.6%)
Missing	354 (30.5%)	147 (51.0%)	501 (34.6%)
Assistance in finding, maintaining, or changing jobs? ^a			
No	905 (77.9%)	245 (85.1%)	1150 (79.3%)
Yes	206 (17.7%)	36 (12.5%)	242 (16.7%)
Missing	51 (4.4%)	7 (2.4%)	58 (4.0%)
Do you take classes, training or do something to help you get a job or a better job or do better at the job you have now? ^b			
No	637 (54.8%)	98 (34.0%)	735 (50.7%)
Yes	105 (9.0%)	27 (9.4%)	132 (9.1%)
Missing	420 (36.1%)	163 (56.6%)	583 (40.2%)
Do you volunteer? ^b			
No	421 (36.2%)	69 (24.0%)	490 (33.8%)
Yes	340 (29.3%)	62 (21.5%)	402 (27.7%)
Missing	401 (34.5%)	157 (54.5%)	558 (38.5%)
Person was in paid individual job in community-based setting during typical 2- week period? ^a			
No	1091 (93.9%)	276 (95.8%)	1367 (94.3%)
Yes	55 (4.7%)	10 (3.5%)	65 (4.5%)
Missing	16 (1.4%)	2 (0.7%)	18 (1.2%)
Person was in paid small-group job in community-based setting during typical 2- week period? ^a			
No	1072 (92.3%)	277 (96.2%)	1349 (93.0%)
Yes	72 (6.2%)	7 (2.4%)	79 (5.4%)
Missing	18 (1.5%)	4 (1.4%)	22 (1.5%)

Note. ^aVariable taken from NCI-IPS Background Information. Respondents were case managers. ^bVariable taken from NCI-IPS Section I. Respondents were participants with IDD.

ing missing data. Missing responses were represented by an indicator variable (1 = missing, 0 = not missing) and included in the propensity score estimation approach described below.

2.4. Data analysis

We use a propensity score matching (PSM) approach to select a sample of participants that most closely resemble participants in the NCI with an ASD diagnosis. PSM is a quasi-experimental approach used to obtain near-causal estimates from observational data (Abadie & Imbens, 2006; Guo & Fraser, 2014; Rosenbaum & Rubin, 1983). PSM analysis typically uses logistic regression or a similar pre-

dictive model to first estimate a propensity score for each participant based on a number of baseline academic and demographic predictors. Participants are then matched with counterparts in the comparison group who have similar propensity scores, alleviating potential biases in the groups’ composition. In this way, PSM attempts to replicate a randomized controlled trial in situations where the assignment to a specific treatment or condition is not possible. In a typical randomized trial, random assignment of participants to conditions results in an equal distribution of potential confounding variables between the treatment and control groups. Applying propensity weights is another approach to reach an equal distribution of confounders between two groups that have not been randomly assigned.

Table 2
Unmatched comparison of outcomes for participants with and without ASD

Outcome	N	Non-ASD mean	Non- ASD SE	ASD mean	ASD SE	z	p
Community employment is a goal in person's service plan? (Yes = 1, No = 0)	1,397	0.254	0.013	0.183	0.023	-2.459	.014
Would you like a job in the community? (Yes = 1, No = 0)	722	0.524	0.020	0.510	0.050	-0.254	.799
Do you have a paid job in the community? (Yes = 1, No = 0)	949	0.144	0.012	0.163	0.031	0.660	.544
Assistance in finding, maintaining, or changing jobs (Yes = 1, No = 0)	1,392	0.185	0.012	0.128	0.20	-2.265	.024
Do you take classes, training or do something to help you get a job or a better job or do better at the job you have now? (Yes = 1, No = 0)	867	0.142	0.013	0.216	0.037	2.145	.032
Do you volunteer? (Yes = 1, No = 0)	892	0.447	0.018	0.473	0.044	0.563	.573
Person was in paid individual job in community-based setting during typical 2- week period? (Yes = 1, No = 0)	1,432	0.048	0.006	0.035	0.011	0.563	.344
Person was in paid small-group job in community-based setting during typical 2- week period? (Yes = 1, No = 0)	1,428	0.063	0.025	0.007	0.009	-2.526	.012

Propensity analyses were run in R using the “twang” package, or the Toolkit for Weighting and Analysis of Nonequivalent Groups (Cefalu et al., 2021). Generalized boosted regression models (GBMs; Friedman, 2001) were used to estimate propensity scores, which were then applied as inverse probability of treatment weights in our outcome models using the “survey” package (Lumley, 2020). The goal was to estimate the average treatment effect on the treated (ATT), or in this case, the average treatment effect of those participants with IDD and an ASD diagnosis when compared to a matched sample of individuals with IDD but without an ASD diagnosis. Propensity scores are applied in the form of weights, so effectively participant responses in the IDD only group are weighted “up” or “down” based on their similarity to participants in the IDD+ASD group. This can result in differing sample sizes depending on the outcome being assessed.

The GBM estimation procedure also results in measures of relative influence for each of the covariates involved in the matching process. Results indicated that age of participant was the most important component in propensity score estimation, followed by total HCBS expenditures, gender, level of mobility, and amount of extraordinary behavioral support needed from the SIS. Overall, variables from all three data sources (NCI-IPS, SIS, and Medicaid) provided meaningful contribution to the estimation of propensity scores. A figure displaying the relative influence of all covariates with a significant contri-

bution to the estimation of 1% or more is available directly from the authors.

3. Results

Table 2 provides naive (unweighted) inferential comparisons between participants with and without ASD on all outcomes. Compared to participants with IDD, but without ASD, participants with IDD and ASD were less likely to have employment as a goal in their service plan (IDD only = 24.4%, IDD and ASD = 17.7%, $p = .014$), less likely to have received assistance in finding, maintaining, or changing jobs (IDD only = 17.7%, IDD and ASD = 12.5%, $p = .024$), more likely to take classes, training or do something to help get a job or a better job or do better at the job they have now (IDD only = 14.2%, IDD and ASD = 21.6%, $p = .032$), and less likely to have worked in a paid small-group job in community-based setting during typical 2-week period (IDD only = 6.3%, IDD and ASD = 0.7%, $p = .012$).

For comparison, full propensity-weighted results are available in Table 3. When compared to a matched cohort of participants with IDD and without ASD, participants with IDD and ASD were less likely to have community employment as a goal in their service plan (ATT = -0.18, SE = 0.06, $p = .003$), less likely to have received assistance in finding, maintaining, or changing jobs (ATT = -0.13, SE = 0.05, $p = .014$), and less likely to work in a paid small-group

Table 3
Average treatment effects for participants with ASD vs. matched sample without ASD

Outcome	N	Potential outcome (non-ASD) mean	ATT	Robust SE	<i>z</i>	<i>p</i>	LL	UL
Community employment is a goal in person's service plan? (Yes = 1, No = 0)	416	0.399	-0.181	0.061	-2.963	0.003	-0.300	-0.061
Would you like a job in the community? (Yes = 1, No = 0)	323	0.580	-0.055	0.084	-0.647	0.518	-0.220	0.111
Do you have a paid job in the community? (Yes = 1, No = 0)	421	0.156	0.026	0.055	0.471	0.638	-0.082	0.135
Assistance in finding, maintaining, or changing jobs? (Yes = 1, No = 0)	417	0.271	-0.129	0.052	-2.459	0.014	-0.231	-0.026
Do you take classes, training or do something to help you get a job or a better job or do better at the job you have now? (Yes = 1, No = 0)	400	0.167	0.022	0.057	0.375	0.707	-0.091	0.134
Do you volunteer? (Yes = 1, No = 0)	406	0.506	0.031	0.073	0.430	0.667	-0.112	0.174
Person was in paid individual job in community-based setting during typical 2- week period? (Yes = 1, No = 0)	425	0.084	0.021	0.043	0.487	0.626	-0.064	0.106
Person was in paid small-group job in community-based setting during typical 2- week period? (Yes = 1, No = 0)	420	0.102	-0.066	0.029	-2.241	0.025	-0.124	-0.008

Notes. ASD = Autism Spectrum Disorder. ATT = Average Treatment Effect on the Treated. Propensity scores were obtained using generalized boosted regression models and implemented as inverse probability of treatment weights for all outcome models.

community-based setting during a typical two-week period (ATT=-0.07, SE = 0.03, $p = .025$). No differences were observed for whether a person with IDD would like to have a job in the community, having a paid job in the community, taking classes, training, or something to help get a job, volunteering, or working in paid individual job in a community-based setting (all $ps > .500$).

4. Discussion

Our results suggest that people with ASD and IDD may secure group community employment at rates lower than people with IDD alone, consistent with findings from previous studies (Bush & Tasse, 2017; Nord et al., 2016). This study is distinguished, in part, by two factors: the use of merged datasets to enhance the scope of variables available for analysis (particularly for matching purposes), and the use of comparable samples of participants with and without ASD, statistically matched on factors that have been shown to influence employment outcomes in prior literature. The use of propensity score matching for this analysis was particularly important since it established close comparability between the two subsamples, thus removing many questions about whether our results came about because of difference

in characteristics in the subsamples with and without ASD.

While people with IDD and ASD had lower rates of employment in group community settings than people with IDD alone, our study did not find differences in terms of whether respondents expressed wanting to have a job, or in terms of working in individual community settings, as reported by both participants and their case managers. The causal pathways to explain this observation remain unclear, and we are unaware of other empirical findings that have investigated the comparative desire for work between people with IDD with and without ASD. While prior non-empirical, peer-reviewed articles have suggested that people with ASD have the desire to work (Hendricks, 2010), barriers to employment, including difficulties navigating social interactions (Scott et al., 2015) and low hope for finding meaningful work (Hayward et al., 2019) have also been noted in literature focused on ASD, specifically. We believe more work is needed to help us understand the drivers behind the desire for work among people with IDD generally, and particularly for people with IDD and ASD.

We were also interested in the finding that people with IDD and autism reportedly had an employment goal in their service plan less often than people with IDD alone, and that they received less services related to job search and placement. It stands to reason that

these two findings co-exist, since having an employment goal likely drives service allocation. However, it is less clear why, in the context of these results, people with IDD with and without ASD achieve similar individual community employment outcomes. Considering that job search and placement services have been found to be correlated with obtaining individual community employment (Di Francesco et al., 2021; Kaya et al., 2018; Nord & Hepperlen, 2016) these findings may warrant further research.

Our study's findings also raise important system-level questions. Policy commitments such as Employment First have placed high priority on employment, and have set expectations that service systems improve employment outcomes for people with IDD with or without ASD. For many people with IDD, setting a goal for employment in one's individual service plan has become a common way of building system accountability for supporting employment, and having an employment goal has been shown to be an important predictor of community employment outcomes about adults with IDD (Broda et al., 2021; Butterworth et al., 2015; Nord et al., 2018). Our study's findings that people with IDD and ASD identified fewer employment-related goals in their service plans than respondents with IDD without ASD raises the question: why are fewer folks getting support for finding employment if there is no difference in wanting a job?

Intentional planning for transition to work, including assessing person-environment fit for work and person-centered planning practices may have an important role to play in understanding a person's desire to work, as well as the supports they would need to secure and hold employment (Anderson et al., 2018; Blaskowitz et al., 2019). Thus, intentional person-centered planning may hold a key to both enhancing interest in work among people with IDD and ASD, and setting up attainable goals for obtaining work, with adequate supports.

Our findings indicate that people with IDD with and without ASD differ in terms of their likelihood of having an employment-related service goal. This finding suggests that a tailored approach to service planning may be necessary to promote both individual and system-level outcomes related to employment. An individualized approach to planning, which placed the person with IDD at the center of the planning process, has been empirically shown to promote better outcomes in a randomized quasi-experimental study (Gosse et al., 2017). Practitioners, including case managers and service providers, may

wish to utilize such individualized service planning approaches when exploring employment opportunities for all people with IDD, and especially people with IDD and ASD, who appear to be particularly disadvantaged by traditional planning processes.

4.1. Limitations

Though our study contributes new knowledge to the field by making direct comparisons in employment-related outcomes for people with IDD with and without ASD using statistically matched samples, it is not without limitations. Readers should bear in mind that the sample for this study only included people who use state-funded long term services and supports in one state, and since only 17% of people with IDD use such services nationally (Larson et al., 2020), the applicability of results to people who do not use state-funded long-term services and supports, and those who may use state-funded services in other states, remains unknown.

Additionally, our data were from years prior to the COVID-19 pandemic, which has had vast impacts on the lives of people with IDD, through service disruptions, new social norms to navigate, and the employment disruptions that have affected the general population. Because we are still unsure exactly how the pandemic has affected employment among people with IDD, future study is warranted to see if the observed differences in outcomes from this study hold true after the onset of the pandemic.

Finally, it is important to note that the prompts used to measure some of the outcome variables in our analysis may have been open to individual interpretation. Of particular note, the item "Do you have a paid job in the community?" came from Part I of the NCI-IPS and was answered directly by people with IDD. It is feasible that some respondents may have interpreted their job, for instance, in a workshop setting to be paid community work (since they leave the house to go to work and collect a paycheck), though this is generally not considered to be paid community work in our field.

5. Conclusion

Using a rigorous methodological approach, we found that people with IDD and ASD are less likely to have paid, small-group employment in the community and less likely to have a goal for employment in their individual service plan, compared to a matched

sample of people with IDD only. Though limitations exist, our findings make a unique contribution to the field and suggest that a more individualized and nuanced approach to employment-related service planning may be needed to support people with IDD, and especially those with IDD and ASD to see employment as a possibility and to ultimately attain and maintain satisfying community employment.

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Conflict of interest

The authors declare that they have no conflict of interest.

Ethics Statement

This study was approved by the Institutional Review Board (IRB) at Virginia Commonwealth University (approval number HM20002308).

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Informed consent

Not applicable as this manuscript does not contain any identifiable information about individual participants.

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